

### Abstract of the Disclosure

SC light is generated from the input signal 2, of  
 an OTDM signal light 1 with wavelength  $\lambda_{s1}$  and an input  
 5 signal 2 with wavelength  $\lambda_{s2}$  using an optical fiber and  
 the like, and the wavelength of the SC light is converted  
 into wavelength  $\lambda_{s1}$  using a BPF with center wavelength  
 $\lambda_{s1}$  (a specific-timing optical pulse with wavelength  $\lambda_{s1}$   
 is extracted from the SC light). After the addition  
 10 timing of the wavelength-converted light is adjusted  
 by a delayer ( $\tau$ ), both this wavelength-converted light  
 and signal light 1 are inputted to an optical add circuit  
 and are added.